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APICAL CHARACTERS IN SOMATOGYRUS, WITH DESCRIPTIONS OF THREE NEW SPECIES.

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In his description of *Somatogyrus walkerianus*, (NAUT., xviii, p. 140), Aldrich stated that "the nucleus is obliquely placed and projects markedly beyond the outline of the spire on the left side." This is the only observation that has been published with reference to any special apical characters in this genus.

Recently, while studying several lots of *Somatogyrus* collected by Messrs. Hinkley and Wheeler in Arkansas, I noticed, while examining an uneroded specimen with an ordinary glass, that not only was the apical whorl decidedly everted, but that it was apparently punctate. On putting it under a compound lens the spirally punctate sculpture was clearly developed. This led to a careful study of all of the described species with some very interesting results.

The irregular coiling of the apical whorl, or partial eversion, as it were, is very common in *Somatogyrus* and is found, to a greater or less extent in all of the species in which the spire is more or less conically elevated and acute. In species having the apical whorls flattened, of which *S. strengii* is a conspicuous example, no eversion is found.

The amount of apical eversion varies not only in the different species, but also in individuals of the same species. But when

it does occur in any species, it is, apparently, always present to some degree. As a specific character, therefore, the presence or absence of eversion can be relied upon, but the amount of eversion, when present, would seem to be an individual, rather than a racial or specific peculiarity.

The amount of eversion is usually coincident with the height and acuteness of the spire. In species having a comparatively high, acute spire, the apical whorls are more closely coiled and the apical whorl, itself, is very convex and separated from the succeeding whorl by a deep, constrictive suture. In species with a blunter apex the apical whorl is less convex, being well rounded above, but less constricted below by the suture. In all of these forms, the apex itself, when viewed laterally, is not acutely pointed. It is more or less obliquely flattened on top and the tip, or what would be the tip if it were everted, is below the level of the surrounding whorl and often is, as it were, immersed in the axis.

In species with flat or planorboid apices, there is no eversion of the apical whorl, which is not constricted by the suture, but is flatly rounded above and separated from the succeeding whorl by a well defined, but vertical suture.

In nearly all of the species that have been examined, there is a well defined apical sculpture. In *Somatogyrus*, apparently, the embryonic shell has only a single whorl and the apical sculpture, when present, is confined to that whorl. It is wholly epidermal in character. The epidermis being very thin and delicate, it is extremely subject to erosion and frequently has entirely disappeared in specimens, which, so far as the shape of the whorl is concerned, are substantially uneroded. For this reason, in several of the described species none of the specimens on hand were sufficiently perfect to afford any information as to their apical sculpture and in others the apices of all of the specimens were entirely eroded.

The apical sculpture, when present, is exceedingly fine and delicate and, even in perfect specimens, usually requires a lens of 100 diameters to develop it fully. It is, apparently, quite constant in its character in each species and, when different in detail, would seem to be a good specific character.

The apical sculpture begins with the earliest formation of the shell covering and, so far as I have observed, does not extend beyond the embryonic portion. Usually, at first, it consists of irregular wrinkles, which are, often, quite regularly transverse in position. After about the first half of the apical whorl, these develop into small punctations and become regularly spiral in arrangement. In some species these spiral lines of punctations extend back to the very tip of the shell. In the next stage of development, these rows of spiral pits become fused into a continuous, more or less, perfect groove and the divisions between them become fine, spiral liræ. The tendency to become lirate is stronger on the lower part of the apical whorl and, perhaps, the most usual form of sculpture is punctate-lirate above and lirate below. But not unfrequently the lirate sculpture covers the whole of the last half of the whorl.

With the exception of the species with a planorbiform apex, I have not been able, as yet, to discover any sufficient differences in the apical characters that would serve to differentiate the characteristic species of the Alabama drainage, having a flattened, very heavily calloused columella, from those of the Ohio system with a relatively thin, rounded columellar lip.

In the following species I have not been able to ascertain the apical characters on account of the eroded condition of all of the specimens on hand: *S. aldrichi*, *biangulatus*, *constrictus*, *crassus*, *pumilus*, *pygmæus*, *tennesseensis* and *umbilicatus*.

The following notes give briefly the results of my examination of the rest of the described species:

S. amnicoloides Walker. Apex blunt, flatly rounded. Apical whorl scarcely at all everted, not constricted by the suture, which is well impressed, but vertical. Sculpture practically obsolete under 100 diameters.

S. aureus Tryon. Apex prominent. Apical whorl everted, sometimes very much so, convex, constricted by a deep suture, which varies as the whorl is more or less everted. Sculptured, at first, with strong, irregular wrinkles, then regularly, spirally punctate, becoming obsoletely lirate on the second half of the whorl. The tendency to liration is stronger on the lower part of the whorl towards the suture.

S. coosaensis Walker. Quite different from any other species. Apex not prominent nor much elevated. Apical whorl flatly rounded, very rapidly enlarging, scarcely everted, not constricted by the suture, which is deep, but vertical. Apical tip not turned down, but up. Sculpture, wrinkled and punctate above, lirate below.

S. crassilabris Walker. Apex subelevated. Apical whorl rounded, constricted by a rather deep suture, everted and obliquely flattened above. Sculpture, strongly and regularly spirally punctate above from the tip, lirate below.

S. currierianus Lea. Apex rather prominent. Apical whorl rather low, nearly flat above, convexly rounded, but not constricted by the suture and not everted. Sculpture, spirally punctate-lirate above, lirate below.

S. decipiens Walker. Apical whorl very slightly everted, obliquely flattened above, low, not constricted by the suture. Sculpture, wrinkled at first, then spirally punctate above, lirate below.

S. depressus Tryon. Apex rather blunt, but higher and more rounded than in *integer*. Apical whorl slightly everted, obliquely flattened above, but not constricted by the suture. Sculpture, punctate or malleated, more decidedly than in *integer*; no trace of liræ.

S. excavatus Walker. Only a single specimen sufficiently perfect to show any trace of the sculpture. In this, the erosion is not sufficient to destroy the shape of the apical whorl, but the sculpture is very indistinct. Apparently, it is irregularly, transversely wrinkled, but no distinct punctations are visible. The apical whorl is flatly rounded above, but not constricted by the suture. The apical tip is not immersed, but projects above the surrounding whorl.

S. georgianus Walker. Apical whorl prominent, elevated, not much constricted by the suture, much everted and obliquely flattened above. The second whorl is shouldered. Sculpture spirally punctate.

S. hendersoni Walker. No specimens with perfect apices. Apical whorl much elevated, though variable in this particular, more or less everted, usually much so, and constricted by the

suture. Sculpture, evidently irregularly punctate, no signs of liræ.

S. hinkleyi Walker. Apical whorls more or less elevated, bluntly rounded. Apical whorl flatly rounded, not constricted by the suture, apex immersed. Sculpture, very finely and irregularly punctate above and more or less lirate below.

S. humerosus Walker. Apical whorl much elevated, everted, rounded and constricted by the suture. Sculpture, punctate above and lirate below.

S. integer Say. Apical whorl not everted, flatter than in *subglobosus*. Sculpture, scarcely more than wrinkled, no liræ.

S. mexicanus Pilsbry. Apical whorls elevated, rather pyramidal, more so than in any other species, closely coiled, rather acutely pointed. Apical whorl only slightly everted, not constricted by the suture. Sculpture, closely, finely and irregularly punctate, no liræ.

(To be continued.)

THE NEW MEXICAN EXPEDITION OF 1914—ASHMUNELLA.

BY H. A. PILSBRY AND JAS. H. FERRISS.

(Concluded from page 35).

ASHMUNELLA DANIELSI DISPAR n. subsp. Pl. 2, fig. 2.

Smaller than *A. danielsi*, composed of 5 whorls, and like that in having no trace of a parietal tooth. The long tooth in the outer lip is strongly developed. The two basal teeth are nearer together, and more or less completely united or sometimes fused into one. The umbilicus enlarges very little at the last whorl.

Height 5.8, diam. 11.2 mm.

Smallest adult, diam. 9.8, largest 11.25 mm.

Locality.—Station 55 (1914), Little Whitewater Canyon, Mogollon Mountains.

One of the smallest *Ashmunellas*. It runs parallel to *A. duplicidens* of the Chiricahua range in structure of the basal teeth.

One hundred examples were collected. No other shells were found at this station except a few of the smaller families.